PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:	)	<u>Group Art Unit</u>: 2872
	)	
Jean-Claude GROSSETIE *et al.*	)	<u>Examiner</u>: A. Chang
	)	
Serial Number: 09/530,968	)	*Attorney Docket*: GROS3002BEU
	)	
Filed: May 19, 2000	)	<u>Confirmation No.</u>: 6299

For: Computer-Assisted Holographic Method And Device

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Honorable Commissioner For Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

Sir:

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reasons stated on the attached sheets (no more than 5 pages are provided).

I am the attorney or agent of record.

Respectfully submitted,
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REASONS FOR REQUESTING REVIEW OF THE FINAL REJECTION
(Attachment to Pre-Appeal Brief Request for Review)

Review of the final rejection of claims 1, 4, 6-14, and 18-25 made in the sixth Official Action, dated July 14, 2006, is requested for the following reasons:

1.   Rejection of Claims 1 and 14 Under 35 USC §112, 1st Paragraph for Lack of Enablement

Claims 1 and 14 include the limitation *"computing a set of two-dimensional images representing the object as seen from respective different viewpoints in the three-dimensional geometric space, each of said objects representing the object as seen from one of said different viewpoints."* As described in the specification, this involves computing projections of the object onto plane 8 using plane 7 to define the viewpoints (explained in detail in lines 19-29 on page 10 of the original specification and illustrated in Fig. 4).

The Examiner does not dispute that this two-dimensional image computation step is described in the specification, or that one skilled in the art would have been enabled to practice the method as described in the specification. Rather, the Examiner's objection is apparently that the method of the invention would not work if one did not use the description given in the specification, *i.e.*, the claim language would not be enabled if it were **modified** to recite *"representing the object as seen from any viewpoints in three-dimensional space."* In reply, the Applicant respectfully submits that the enablement requirement of 45 USC §112, 1st Paragraph applies to the actual claim language, and not to claim language arbitrarily modified by the Examiner. It is not proper to change an enabled claim limitation such as "a screw that fits into the hole" into a non-enabled limitation such as "a screw that fits into any hole in the universe" solely for the purpose of rejecting the claim, which is precisely what the Examiner has done. Claims 1 and 14 recite *"computing a̲ set of two-dimensional images representing the object as seen from respective different viewpoints,"* which is exactly what is described in the specification and which can easily be carried out by the skilled artisan.

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It is true that the example given in the specification involves "planes" and that the claims are not limited to planes. In reply, it is respectfully submitted that one skilled in the art would in fact be able to use shapes other than planes, and that recitation of "planes" would be unduly limiting. There is no inherent reason why the holograms of the claimed invention cannot be constructed on shapes other than planes, and an infringer should not be able to design around the invention simply by using other shapes. In fact, even though the previously applied "Haines" patent (PN 4,969,700) fails to teach all features of the claimed invention, as discussed in a previous response, it does show that **a hologram can be constructed in a surface taking on any shape and located anywhere relative to the object**. As explained in col. 4, line 5 of the Haines patent, "*In general the surface 50 may take on any shape and may be located anywhere relative to the object 30.*" **There is no reason why the claimed invention could not be similarly constructed.**

Furthermore, even if the claims did read on some non-enabled or inoperative possibilities, it is clearly improper to reject a claim for lack of enablement just because it *might* include such inoperative embodiments (much less reject a claim because the language can be modified to cover inoperative embodiments). As explained in MPEP 2164.08(b), "*The presence of inoperative embodiments within the scope of a claim does not necessarily render a claim non-enabled. The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with expenditure of no more effort than is normally required in the art.*" It is respectfully submitted that it does not take any expenditure of effort to determine that one cannot create a hologram by arbitrarily picking points in space. That is why the specification describes use of the hologram computation plane for the purpose of calculating the images.

This is not a case where the claim covers chemical compositions whose effects nobody can predict. This is not a case where the claim recites a feature that in fact is not described and one would not know how to make. In this situation, the original specification actually does describe what is claimed ("*computing a set of two-dimensional images representing the object*

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as seen from respective different viewpoints in the three-dimensional geometric space, each of
said objects representing the object as seen from one of said different viewpoints in the three-
dimensional geometric space") in such as way that the skilled artisan could practice the
invention, and therefore claims 1 and 14 meet the requirements of 35 USC §112, 1st Paragraph.

It is noted that on page 7 of the Official Action, the Examiner makes the statement that
"the applicant is respectfully noted that the specification is required to provide adequate
*teachings and enablement of **every possibility** covered by the claims. . .."* This statement is
simply wrong. Even in chemical cases, there is not requirement to describe *every* possibility
covered by the claims. Almost every non-chemical case, and most chemical cases, include
claims that cover variations of what is described in the specification. Not a single claim in any
patent would survive the Examiner's test of "**every possibility**" being described in the
specification. For example, most claims are not limited to a type of material, and therefore cover
materials that do not even exist at this time. Similarly, every claim to a combination
"comprising" a, b, and c covers the addition of some non-enabled (in this case, the non-enabled
d is constructing a hologram from random points in space rather than from the points described
in the specification). According to the Examiner's new **every possibility** rule, all such claims
would be non-enabled. It is applicant's position that the **every possibility** approach taken by the
Examiner is fundamentally wrong, and that the enablement requirement simply means what it
says, that one skilled in the art should be able to make and use the invention as claimed, which
is clearly the case for the applicant's claims.

For the foregoing reasons, reversal of the rejection under 35 USC §1st Paragraph is
respectfully requested.

3.   Rejection of Claims 1, 4, 6-14, and 19-26 Under 35 USC §103(a) in view of "Fourier-
       Transform Computer-Generated Hologram: A Variation ON The Off-Axis Principle"
       (Michelin) and U.S. Patent No. 5,668,648 (Saito)

This rejection is respectfully traversed on the grounds that the Michelin article and Saito
patent both fail to disclose or suggest:

a.   computing a set of two-dimensional images representing an object as seen from different viewpoints in three-dimensional space;

b.   computing a set of elementary holograms, each corresponding to one of the two-dimensional images; and

c.   combining the holograms to form a hologram of the object.

Instead, the Michilin article is directed to the use of Fourier transformation to compute amplitude transmittance from complex fields representing a reference wave, and contains no suggestion whatsoever of constructing a hologram from two-dimensional images, much less two-dimensional images that represent the entire object in the manner claimed. Moreover, the Saito patent is directed to the use of Fourier transforms to generate diffraction elements that might make up a hologram, and also contains no suggestion whatsoever of constructing a hologram from two-dimensional images representing an entire object, as claimed.

Even though <u>neither</u> reference teaches or suggests the claimed computation of two-dimensional images representing an object as seen from different viewpoints in three-dimensional space, and combining holograms representing the images to form a hologram of the object, the Examiner believes that *"such modification would have been obvious to one skilled in the art since the modification only requires repeating the same calculation process for different two-dimensional image information for the benefit of producing a composite hologram from a composite two-dimensional image information,"* as explained on page 7 of the Official Action, in the first complete paragraph. <u>The Examiner's rationale for the modification of the prior art, *i.e.*, that the modification is **simple to carry out** ("only requires repeating the same calculation process for different two-dimensional image information") and **has benefits** ("for the benefit of producing a composite hologram") is **classic hindsight**</u>.

Basically, the rejection is not based on any teachings in the prior art, but rather on the Examiner's conclusion, having read Applicant's specification and claims, that the invention is obvious because it "only requires" repeating the same calculation. This basis for rejection is not only conclusory, but it is also wrong since it ignores the fact that the images the calculations are performed on, namely two-dimensional images of an object seen from different viewpoints in

three-dimensional space, are also not taught by the prior art. It is not proper to substitute a hindsight judgment that the invention is a simple modification of the prior art for an actual teaching of the modification, and there is clearly *no* teaching of the claimed modification. The prior art only teaches what is being modified, namely formation of holograms using certain transforms, and not the modification, forming the hologram by combining holograms of two-dimensional images of an object taken from different viewpoints in three-dimensional space.

For the foregoing reasons, reversal of the rejection based on 35 USC §103(a) is respectfully requested.

3.   Objection to Claims

For completeness, the Applicant also traverses the new objections to the language of claims 1-4, 6-16, and 18-25, most of which was added in an attempt to comply with the Examiner's continually changing requirements, as follows:

a.   The objection to the recitation of coordinates because they are mathematical abstract objects that have no physical meaning is traversed on the grounds that the claimed coordinates do have physical meaning as location variables in the intensity function, and that there is not logical reason why a claim cannot use variables even though they are, in a sense, mathematical constructs.

b.   The objection to "said real function" in claims 6 and 8 is respectfully traversed on the grounds that claims 1 and 14 only recite one real function and therefore there is no ambiguity in the subsequent recitations of "said real function."

c.   The objection to "simulating illuminating the oversampled image" is respectfully traversed on the grounds that the fact that calculation is required to simulate the image does not make the recitation of simulating the image ambiguous. The Applicant is in fact "simulating the image" (which language was in fact added at the *suggestion* of the Examiner).

d.   The objection to *extracting* amplitude values. . .to produce hologram is respectfully traversed on the grounds that while the amplitude values of the sum do not themselves produce the hologram, they are in fact used to produce the hologram, as recited.